



Environment, Health and Safety Division

Integrated Functional Appraisal
Of the
Nuclear Sciences Division

FY 2002

Final Report
July 15, 2002

1.0 Executive Summary

The Environment, Health and Safety Division (EH&S) conducted an Integrated Functional Appraisal of the Nuclear Science Division (NSD) during March and April 2002. The Appraisal consisted of initial scope discussions, records review, and inspection of spaces to identify uncontrolled hazards. The inspection team was comprised of technical specialists from EH&S and the Nuclear Science Division Safety Coordinator. Department of Energy Berkeley Site Office was invited to participate in the inspections but did not send a representative.

The results of the Appraisal are:

- Training compliance (Job Hazard Questionnaire and class completion) is generally good.
- Waste compliance has been a continuing issue, with problems pertaining to the labeling of wastes. Ongoing efforts have been made by the Division to correct this issue.
- Chemical safety and industrial hygiene issues are generally well addressed.
- There were multiple inspection findings relating to deficiencies in electrical safety. These areas should be emphasized as the Division's safety program moves forward.
- A more consistent effort should be made to improve housekeeping at the 88" Cyclotron.

Overall, safety within the Nuclear Science Division has excellent management support and participation. The Division has a safety program that is effective in identifying and controlling hazards especially in the experimental design phase. With a solid program and training foundation in place, attention needs to be continued in the areas of matrixed employees, hazardous waste management and electrical safety.

2.0 Introduction

The Integrated Functional Appraisal (IFA) is a key component of Lawrence Berkeley National Laboratory's Integrated Safety Management (ISM) system. It is part of Core Function Number 5 (Continuous Improvement) of the ISM concept, and forms one of the three tiers of the Laboratory's safety assessment program that evaluates the ongoing effectiveness of Divisions' Integrated Safety Management programs. LBNL's Environment, Health and Safety (ESH) Division has been conducting IFA's of all laboratory organizations since 1996, with each organization reviewed every three years. The Nuclear Science Division's last IFA was conducted during FY 1999.

3.0 Appraisal Process

3.1 *Determination of Scope, Preparation for Site Visits*

The IFA Team Leader (Carole Fried) met with Kathie Hardy, the Nuclear Science Division's Safety Coordinator, in early 2002. They reviewed the past Division Self-Assessment reports; Management of Environment, Health and Safety (MESH) report; previous IFA report; and SAA Compliance Inspection reports. It was determined that the research activities as reflected in the existing recorded information had not changed significantly in the period between the two appraisals. From this discussion it was decided to inspect all NSD research spaces in B71, B70, B72 as well as all areas of B88 including laboratories, machine shops, cave areas, basement electrical rooms and storage areas. The Division Director's office suite in B50 and as well as B88 office areas were excluded from this inspection. Those areas had been previously inspected during the Division's Self-Assessments. Office ergonomics issues had been previously evaluated.

Several NSD employees frequently perform work at other research facilities (i.e., SNO, KamLAND, CERN, RHIC, etc.). These spaces were not visited. EH&S at those facilities is handled by the specific institution.

An announcement and explanation of the IFA inspection and process was made at a NSD All Hands meeting 3 weeks prior to the first site visit.

The precise spaces visited are listed in Appendix A.

3.2 *Compliance Records Review*

Prior to the site visits, records of accident statistics, waste compliance, Activity Hazard Documents, the HEAR database, Occurrence Reports, Job Hazard Questionnaire and Required Training completion rates were reviewed (note: these items are also included in the Division's annual Self-Assessment).

3.3 *Appraisal Team*

The appraisal team members, and the hazard areas for which each was responsible, were:

Carole Fried (EH&S) - Appraisal Team Leader, Industrial Hygiene

Tom Caronna (EH&S) -Electrical Safety

Don Van Acker (EH&S) – Occupational Safety

Robert Fairchild (EH&S) – Radiation Safety

Kathie Hardy (NSD) - representing the Nuclear Sciences Division, Safety Coordinator

Robert Campbell (EH&S) – Fire Protection

Mark Lasartemay (EH&S) – Waste Management

Connie Grondona (EH&S)- Health Services

Peter Lichty (EH&S)- Health Services

3.4 Site Visits

The inspection team visited the sites from March to April 2002. Each site visit began with an opening conversation with the individual responsible for that space (if he/she was present) and an explanation of the purpose of the visit. During the visits the team made note of their findings. Findings from each space were discussed with the person responsible for that space (if present) at the time of the inspection.

4.0 Results

4.1 Compliance Records Review

Training: NSD has been aggressive in pursuing its training responsibilities. This division has many guests who work at the laboratory for varying degrees of time and frequencies.

As of early June 2002 the training database shows NSD with a 91% Job Hazards Questionnaire (JHQ) completion rate. When that rate is further examined, the completion rate is 94% for employees and 90% for guests. The Cyclotron Facility has developed an information section for guests on their website. This information includes a section on Safety and Training for Guests as well as a Training Checklist that is to be completed by all guests and faxed to the Cyclotron Facility, 2 weeks prior to the start of work (see Appendix B). The current video used by Cyclotron management for training is out of date. Management has planned to update this video for quite sometime. It is important to provide employees and guests with current information and so Cyclotron management should set a target date for its completion.

Also as of early June 2002, the training database shows that 85% of the classes identified as "required" by the Job Hazards Questionnaire had been completed. In general, employees are required to complete all identified classes within six months of their hire date. When classes are backed out for those individuals with hire date within the last six months, the completion rate increases slightly. There are, however, several long-term employees who show training deficiencies, which should be addressed.

When reviewing the NSD "incomplete required" courses in the training database, two courses, Ergonomics for Computer Users EHS0060 and Radiation Protection-Accelerator Beam Line EHS0440, account for 88% of the deficiency.

The NSD has recognized the potential injuries that could result from repetitive motion and has made ergonomics a priority. The availability of Ergonomic Workstation Evaluations was announced during an All Hands Meeting and several employees requested evaluations. Recently, the NSD Safety Coordinator has worked with the LBL Ergonomics Program Manager to develop an EHS 0060 training program specific to the Division dealing with keyboard and microscope use. It is expected that this new program will increase the completion rate for that course. Line Management needs to follow up and verify that employees are adapting their work practices to reflect an ergonomic approach.

EHS 0440 Radiation Protection- Accelerator Beam Line course is "required" for guests and "recommended" for staff and so the reporting in the Training Database does not accurately reflect the completion rates for the course. Several employees take more

advanced radiation classes and complete annual renewals as specified by an RWA authorization associated with their work. These employees do not need to repeat EHS440, however they still show up on the database as incomplete (expired) training. The NSD Safety Coordinator is working with B88 personnel to develop specific group training profiles for these individuals to eliminate this problem.

Guest users also pose a problem since their schedules and duration of time spent at LBL vary widely. They may have initially taken the class (EHS 440) and are still classified as a guest but may only work at the laboratory for short periods of time every few years. These guest “users” are not removed from the Human Resources database since they will eventually return and so their training shows up as deficient even though they are not at the laboratory. The NSD Safety Coordinator is working with EHS Training Department to solve this issue.

Hazardous Waste Management: Over the past years, NSD has improved their compliance with respect to their waste areas, however, there is an ongoing compliance problem with B-88 Cave 0. It seems that there are students working in this area and there has been a lack of communication and/or training. Special presentations on how to characterize low level radioactive waste have been given but there has not yet been much improvement. During the IFA inspections, a blank radiation tag was observed on a container that was full. The PI did correct this situation as soon as he was informed of the finding.

All other areas at B-88 are in compliance. B-70 rooms 203-209 are in excellent condition.

ORPS: Since the last IFA Report in July 1999, there have been 3 Occurrence Reports in the NSD. The most recent occurred in 08/01 and involved radiation contamination of an employee’s finger. The direct cause of this occurrence was inattention to detail while the root cause was determined to be a deficiency in the training program requiring gloves when handling sealed sources. This training deficiency has been corrected. It should be noted that by following procedures, the employee limited the spread of contamination and risk of exposure.

As a result of one of these occurrences, NSD has focused its’ attention on matrixed employees of which there are many, mostly from Engineering, Facilities and Administrative Support. Supervision of these employees with regard to their health and safety needs had been insufficient and/or overlooked due to the nature of matrixed work. The Division has since participated in discussions with other laboratory groups concerning the responsibilities and supervision of matrixed employees.

4.2 Site Visits

Findings and actions resulting from the site visits are presented in Appendices C & D. Appendix E contains resource information for some of the corrective actions. There were a total of 97 findings, of which 16 are of a higher priority for correction (indicated in yellow in Appendices C & D).

Findings where consistent issues were noted include:

Housekeeping: In general, housekeeping continues to be an issue for the Division. Based on previous Safety Committee walkthroughs and Division Self-Assessments, one observes that the degree of housekeeping within the Division varies. There are periods of time and areas within the 88" Cyclotron when housekeeping is exceptional and other times when it is not. Two other areas of note that require a thorough housekeeping review are B71 Rooms 140 and 141 and B72 Rooms 118 and 128. A consistent degree of effort must be put into housekeeping. Additional line management inspections may help to achieve that consistency.

Electrical Safety: Several pieces of apparatus had exposed live conductors, which could lead to electric shock if accidentally contacted. In addition, obstructed electrical panels were a fairly consistent finding (see Appendix E for clearance requirements). It appears that consciousness needs to be raised about this important safety issue.

Facilities Responsible Issues: A number of issues related to Facilities work were noted during the IFA inspections.

There were several plumbing issues with regard to fire sprinklers. Sprinklers had been removed and plugged. In some situations, installation of additional equipment or lines, obstructed the sprinkler discharge.

During the first phase of the B88 Seismic Upgrade Project, anchoring bolts were installed throughout various caves and the cave roof. These bolts protrude above the cave roof and pose a severe trip hazard for 88" Cyclotron employees and guests. In addition to the cave roof, they were installed in other locations and their protrusion into workspaces also poses a hazard. 88" Cyclotron line management has attempted to reduce the hazard by placing ramps over the bolts that protrude into the main walkways of the cave roof. They cannot however, cover all the bolts using this method. Facilities should be responsible for correcting this problem and for ensuring that during future seismic upgrade work it does not continue to create this hazard.

5.0 Conclusions

Safety within the Nuclear Science Division has excellent management support, effective Safety Committees and an active Safety Coordinator. The Division has a good safety program that is overall effective in identifying and controlling hazards. With a solid program and training foundation in place, vigilance needs to be continued in the areas of hazardous waste management, electrical safety, workstation ergonomics and supervision of guests and students.

Appendix A

Sites included in FY 2002 IFA Inspections

| <i>Building Number</i> | <i>Room Number</i> |
|-----------------------------------|---|
| 70 | 203 |
| | 209 |
| | 210 |
| | 270B |
| 71 | 140 |
| | 141 |
| | 146 |
| 72 | 118 |
| | 128 |
| 88 | -Entire Basement -Cave Roof -Entire 1 st floor with the exception of the office area, south corner (Rooms 100-122) & Rooms 179, 179A, 179B. |

Appendix B

88" Cyclotron

Guest Training Profile

Training Checklist for Participating Guests

88-Inch Cyclotron

| | <u>Yes</u> | <u>No</u> |
|--|--------------------------|--------------------------|
| 1. Will you be involved in experiments at the 88-Inch Cyclotron less than 30 days/year? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Will you be involved in experiments at the 88-Inch Cyclotron more than 30 days/year? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Will you be working in a Controlled Area for Radiation Protection (not on experiments)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Will you be working in a Radiation Area (>5mR/hr) or with parts which are activated to > 5mR/hr at 30 cm? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Will you be working with sealed sources or radioactive material? | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Will you be working with flammable liquids or gases, including isobutane? | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Will you be working with Class III or higher lasers? | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Will you be using the 88-Inch Cyclotron machine shop? | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Will you be generating radioactive or mixed waste? | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Will you be generating hazardous waste? | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Do you have Rad Worker I or II training from another DOE facility? <i>(Please bring your Rad Worker Cert or Training Profile to the Cyclotron.)</i> | <input type="checkbox"/> | <input type="checkbox"/> |

YES answers and course requirements:

1. EH&S440, NSD1007, NSD3002
2. EH&S400, EH&S439, NSD1007, NSD3002, RWA1083, JHQ
3. EH&S440
4. EH&S400, EH&S440, EH&S439, NSD1007, NSD3002
5. EH&S400, EH&S432
6. NSD2165
7. EH&S280
8. NSD3003
9. EH&S622
10. EH&S604
11. A copy of your Rad Worker Cert or Training Profile may satisfy the requirements for EH&S400, 432, 440 and 450, but not the site-specific NSD courses.

If all answers are NO, the only requirement is GERT (General Employee Radiation Training), EH&S405.

| | |
|--|--------------------------------------|
| Full Name: | Arrival Date @LBNL: |
| Signature: _____ (Provide on Arrival) | LBNL ID#: _____ (Office Use Only) |

Appendix C

Findings: Nuclear Sciences Division

Integrated Functional Appraisal 2002

B88 Cyclotron

| <i>Building</i> | <i>Room</i> | <i>Finding</i> | <i>Action</i> |
|-----------------------------------|--------------------|--|--|
| B88 Laboratory Area | 129 | Conduit needs support. | Secure |
| | | Cabinets with glass doors need shatter resistant application. | Investigate products |
| | | Storage cabinet contains Rad source (U-238) but is not labeled. | Label |
| | | Wires hanging from ceiling in corner. | Remove if no longer in use or attached |
| | | Glass dessicator on top of cabinet is a seismic hazard. | Move to a safer location. |
| | 130 | Two sprinklers on fire sprinkler branch nearest SW wall have been removed and plugged. | Plumbing shop advised of deficiency by R. Campbell <i>Facilities Issue</i> |
| | 134 | Jagged edged mirror near sink is a cut hazard. | Discard |
| | | Unlabeled spray bottle | Label |
| | 137 | Copper sheet blocking doorway and has sharp edges (cut hazard). | Sheet was moved during visit to unblock doorway. Tape over sharp edges. |

NOTE: Yellow Highlight denotes higher correction priority

Bolded items denote findings which are Facilities Division issues.

| Building | Room | Finding | Action |
|---------------------------|------------------|---|--|
| B88 Laboratory Area | 137 | The exit sign posted on the double doors to the high bay lead to an obstructed path. | The sign can be moved so that the door exiting into the 190 corridor becomes the main exit pathway until the high bay area is cleared. This exit must however be kept clear of obstructions (flammable cabinet needs securing) |
| | 135 | End of branch fire sprinkler was removed and plugged. | New Sprinkler needed. Requested submitted to Plumbing Shop by R. Campbell (Facilities issue) |
| | | 1-hour fire rated door was blocked in the open position. | Do not block in open position. The door protects the integrity of the corridor in the event of fire |
| | 190 (hallway) | Cabinets at South end of the hallway could slide and block the exit during a seismic event. Use of corridors for permanent storage is not permitted under Pub 3000, 12.19. If no other location is available then a mechanism must be installed to prevent drawers from sliding open. | Restrain |
| | | Water cooler jug is not restrained. Extra bottles are stored in the exit corridor and could tip and roll obstructing the exit during a seismic event. | Restrain |

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| Building | Room | Finding | Action |
|-----------------------|-------------------------|---|---|
| B88 | Room 124 | Dark Room used mainly by Life Sciences and infrequently by Nuclear Science has no general or local ventilation. | Examine the need for ventilation. |
| B88 Machine Shop Area | Machine Shop (Room 147) | Reorganize storage area. The spare metal sheets have sharp edges and should not be stored next to the door (cut hazard), obstructing (seismic hazard) the entry. The cylinders stored near the door need restraining. | Restrain and reorganize storage. |
| | | Unlabeled containers were found. | Label all containers, especially secondary ones. |
| | | The timer for the coffee pot in storage area needs to be mounted. Presently, the timer was dangling from the electrical cord. | Mount timer. |
| B88 Control Room Area | Room 163 | Cabinet behind Control Room (163A) is not seismically braced. | Bolt cabinet. |
| | | Several chairs with 4-legs and rolling casters were observed throughout this area. These chairs pose a tipping/fall hazard. | Discard all 4-legged rolling chairs. |
| | | Several open doors on equipment racks were noted (ie: C72, C74). | Ensure that the doors stay closed. |
| B88 Basement | Room 045 | Conduit was hanging. | Remove if not in use or attach to supports. |
| | | Cabinet not seismically restrained | Install seismic bracing. |
| | Room 050 | Flammable Storage Cabinet is blocking air intake. Two empty cylinders are stored inside the cabinet. | Relocate cabinet. Verify that the cylinders are required. If not, return to vendor. |
| | Room 070 | Items are stored below the 480 Volt electrical panel (80A3A14A &B). | Remove items to allow for electrical panel clearance. |

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| Building | Room | Finding | Action |
|-----------------|---------------|--|--|
| B88 Basement | Room 067 | Empty junction boxes and disconnects are piled high against the wall. This poses both seismic and trip hazards. | Relocate |
| | | Black rack storing wire spools is not bolted. | Install seismic bracing. |
| | | Storage shelves lack lips or other seismic restraints. | Install seismic restraints. |
| | | Verify noise level in Switch Gear Room. No signs were posted however the level was quite loud. | Verify noise levels. |
| B88 Caves | All Caves | The existence and status of emergency lighting varied from cave to cave. | Ensure that all caves and exit pathways have functioning emergency lighting. |
| | Several Caves | Keys were found in several Sealed Source Safe keyholes. | Store keys in a secure location. |
| | Several Caves | Housekeeping was lacking in most caves with the exception of 4C Gammasphere. | Discard unneeded materials, arrange for proper storage of materials. |
| | Several Caves | Radiation material Inventory stickers were missing from several RMAs and RSAs (Atrium, Cave 1, 3-roof, East Alley Mez, East Alley...). These labels must list the isotopes and their activities of all materials stored. | Place inventory stickers were required. |
| | Cave 0 | 3 Carboys labeled "Toluene" are in Flammable cabinet just inside the cave gate. Toluene, Class 1-B flammable liquid, is not permitted to be stored in those containers. | Store in metal cans. |
| | | Flammable cabinet in "Cryo Center" is not secured | Seismically anchor cabinet. |

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Bolded items denote findings which are Facilities Division issues.

| Building | Room | Finding | Action |
|-----------------|-------------|--|---|
| B88 Caves | Cave 0 | Multiple containers are piled in a cardboard box in the "Cryo Center" liquid storage cabinet. The cabinet has a strong odor possibly spilled liquid within. | Remove unnecessary containers, cardboard box etc. and clean the cabinet. Store only necessary chemicals. If odor persists consider venting the cabinet. |
| | | Multiple pieces of equipment are unsecured along the egress path. | Secure or movement equipment. |
| | | The cabinets along the stairs to the mezzanine are unrestrained and could block egress during a seismic event | Restrain cabinets |
| | | Lead bricks were stored near corrosive cabinet. | Wrap the bricks in tape to prevent the release of lead dust. Discard in metal recycle bins if no longer needed. |
| | | The staircase in the East Alley Mezzanine has a loose wooden step (1 st step, upper staircase). The metal hand rail on the lower staircase (opposite corrosive cabinet) is loose. | Secure wooden stair. Secure handrail. |
| | | The broken plexiglass guard from the He Liquefier Refrigerator poses a cut hazard. | Discard |
| | Cave 2 | Drink cans on top RMA storage outside cave | Food is not permitted in area. |
| | Cave 2.1 | Rad chamber needs electrical bonding. There is an open junction box on the wall | Ensure proper bonding, and close junction box. |

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Bolded items denote findings which are Facilities Division issues.

| Building | Room | Finding | Action |
|-----------------|-------------|---|--|
| B88 | Cave 4A | Both doors to the cave were open but only one door had a "Survey Not Done" posting. | Both doors should be posted thereby giving employees the appropriate warning. |
| | | Open condolette was observed. | Keep closed |
| | | Do not store incubator coolant in water cooler jugs, even if labeled. | Containers normally used to store food products (water in this case) should never be used to store chemicals. Store the coolant in a proper container. |
| | Cave 4B | Access to electrical panels blocked. | Ensure proper clearance. See Pub3000 Section 8. |
| | Cave 4C | Access to PNL (electrical panel) E45A21A5A was blocked. Blockage to that panel (main cut off) posed a high safety risk and so Gammasphere personnel responded immediately to the Electrical Safety Officer's request to clear access to that panel. | Corrected. Paint lines on the floor indicating that access must be maintained. |
| | | Cans of drinks were found next to the RMA area. | No food permitted. |
| | | Boxes obstructed the east side exit from the Gammasphere cave towards the back corridor. | Remove all obstructions from corridor. |
| | Cave 5 | An insulated chilled water line is run directly in front of the sidewall fire sprinkler at the SE corner of the room. | Relocate the line so as to eliminate the discharge obstruction. <i>(Appears to have been created by Facilities)</i> |

NOTE: Yellow Highlight denotes higher correction priority

Bolded items denote findings which are Facilities Division issues.

| Building | Room | Finding | Action |
|-----------------|-------------|--|---|
| B88 | Cave 5 | Ceiling height laser table obstructs sprinkler discharge | Supplemental sprinklers should be installed for complete coverage. |
| | | Sealed sources on bench top were not in use. | Store in locked RMA |
| | | Open junction box on wall. Gutter along wall held open by a brick | Remove brick and close gutter. Close junction box. |
| | | Photoelastic Modulator above laser is a seismic hazard. | Restrain |
| | | Metal shelf with pull out drawers is not seismically restrained. | Restrain |
| | Cave Roof | Anchoring bolts installed as part of the Seismic Upgrade of B88 pose an extreme trip hazard. Several of these bolts located along walkways have been successfully covered by 88 Management using ramps. However numerous bolts remain uncovered. | <i>This is a Facilities issue and an important Lesson Learned. This kind of anchoring can not be used if it will protrude into the walkway creating a trip hazard.</i> |
| | | Step outside Counting Shack (161D) is a trip hazard. | Repair step |
| | | Electrical cord running across the aisle near 161D is a trip hazard. | Install permanent connection. |
| | | RMA-Glovebox 88-GBX-001 had dirty gloves and a pair of pliers on top of it. It was unclear if those items were contaminated. It appears that many individuals (& groups) use this glove box and the lines of responsibility are unclear. | Establish clear lines of responsibility and clean up procedures for individuals using the box. |

NOTE: Yellow Highlight denotes higher correction priority

Bolded items denote findings which are Facilities Division issues.

| <i>Building</i> | <i>Room</i> | <i>Finding</i> | <i>Action</i> |
|------------------------|--------------------|---|---|
| B88 | Throughout 88 | There is an Electrical Panel clearance issue throughout B88 including most caves, the cave roof and the basement. Examples include: Panel #'s 81A9A40B, 440T31A, 40A1A1A, 80A310A, 80A310B, 424A4A, 423A15A, E45A82A, 124A3A, 440B1A, 80A2A10A, 807310A, 807310B. | Ensure adequate clearance. See Pub 3000, Section 8. |

NOTE: Yellow Highlight denotes higher correction priority

Bolded items denote findings which are Facilities Division issues.

Appendix D

Findings: Nuclear Sciences Division

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| Building | Room | Findings | Action |
|-----------------|-------------|---|---|
| 71 | 141 | Inappropriate Radiological postings on the door, RMA & RSA both posted. RWP was issued by MFD Group, however the area was thought to be released in 1999. | Confirm status of room and affix proper signage. |
| | | Combustible storage (boxes, books...) is kept on the floor too close to space heater. | Re-arrange items. Review Pub 3000 for guidelines on safe use of space heaters. |
| | | Books on shelf need seismic restraints. | Restrain |
| | | Coat rack could fall and block exit during a seismic event. | Restrain or relocate |
| | 140 | Flammable items were stored on top of and near heating plate. Though the plate was not in use, these items should be re-located. | Relocate items or remove heating plate if no longer needed. |
| | | Unlabeled chemical containers were noted | Label containers |
| | | Unsecured gas cylinder of xenon was found. | Secure or dispose of if no longer needed. |
| | | No supply air ventilation in the room | Request a ventilation study of room from EHS IH Group. |
| | | Several trip hazards were observed | Relocate items |
| | | Several chemical containers lacked chemical inventory barcodes | Ensure that all chemicals are labeled and bar coded as described by the Chemical Inventory Program. |
| | | | |
| 70 | 203 | Helium gas bottle not properly restrained (single chain only) | Restrain bottle |
| | | Hydrofluoric Acid is stored in the room but a burn kit was not in the room | Obtain a new kit from Health Services |

NOTE: Yellow Highlight denotes higher correction priority

Bolded items denote findings which are Facilities Division issues.

| Building | Room | Findings | Action |
|-----------------|-------------|--|--|
| 70 | 203 | Fume Hood #6 certification sticker indicates last certification was 10/99 while #5 adjacent was last surveyed in 5/08/01. | Verification on the LBL Ventilation Database indicates that #6 was tested 5/01. Ensure that the calibration sticker reflects the correct testing date. |
| | | Two chairs had 4-legged caster wheel. Tip Hazard | Replace chairs. |
| | | Radioactive Material Storage Area under Fume Hood #8, does not have a Radiation Material Inventory sticker. | Perform inventory and affix sticker. |
| | | Decommission the 2 gloves boxes that are no longer in use. | Investigate decommissioning process. |
| | 209 | 5-Gallon container of 2-propynal was stored adjacent to flammable storage cabinet. | Place inside cabinet. |
| | | The drawer under L2929 Scaler contained a sealed source and was incorrectly labeled with "Caution, Radioactive Material" | The label should read "Caution radioactive Material Storage Area, sealed sources only" |
| | 210 | Seismic restraints required for detectors. | Install restraints |
| | | Unwrapped lead bricks behind counter. | Wrap bricks or discard (obtain rad release, if required) in recycle metal hopper. |
| | | Radioactive Material Storage Areas at west end of room need "Caution Radioactive Material" stickers with current isotope inventory listed. | Inventory isotopes and affix label. |
| | 268 | Electrical Panel 045-70 obstructed by storage cabinet | Relocate the cabinet. |
| | | Electrical Panel 045-70 is too close to emergency eye wash/shower. | Consult with IH Group. |
| | | Fire resistance rated corridor door does not properly close and latch. | Work Order submitted by R. Campbell |

NOTE: Yellow Highlight denotes higher correction priority

Bolded items denote findings which are Facilities Division issues.

| Building | Room | Findings | Action |
|-----------------|-------------|--|---|
| 70 | 268 | Seismic bracing of cabinets required | Restrain. |
| | 270 | Unsecured compressed gas cylinder (blue cylinder-ethane/helium) | Secure cylinder |
| | | Unsecured items on shelf near clock | Secure or remove |
| | | Eyewash & cabinet are too close to electrical panel. | Separate panel with plexi-glass-type divider and relocate the cabinet. Cap off eyewash/shower unit if chemicals are no longer being used in the room. |
| | | Unlabeled squeeze bottle | Label all secondary containers. |
| 72 | 128 | RSA- Safe does not have an inventory sticker. | Affix sticker |
| | | Strip on step needs replacing- trip hazard The step is non-uniform (very high)- place a warning sign in addition to the strip. | Replace the worn strip and affix a warning sign. |
| | | Review Lead Handling Procedures with room personnel. | Consult with IH Group. |
| | | Excess storage and clutter throughout the room could obstruct the path of egress during a seismic event. Several items (scintillators) in the room require seismic restraints. | Housekeeping and seismic restraints required. |
| | | Exposed High Voltage cables. | Consult with Electrical Safety Specialist to eliminate this problem. |
| | 118 | Excess storage and clutter throughout the room could obstruct the path of egress during a seismic event. Several items in the room require seismic restraints. | Restrain items and clean up clutter. |
| | | Unlabeled chemical containers were found. | Label containers. |

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Bolded items denote findings which are Facilities Division issues.

Appendix E

Supplemental Information for Corrective Actions

Electrical Clearance Requirements: Pub 3000 Section 8.9.4:

For equipment operating at 600 V (nominal) or less, the minimum required clearance is an unobstructed space 76 cm (30 in.) wide, 91 cm (36 in.) deep, and 198 cm (78 in.) high (measured from the floor). Some installations may require greater clearances.

Clearance space must not be used for storage or occupied by bookcases, desks, workbenches, or similar items.

Hydrofluoric Acid Burn Kits: contact LBNL Health Services at x6266.

Portable Space Heaters: See Pub 3000 Section 12.13